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1. Name of the Invention

Network Event Notice System

2. Field of the Patent Request

(1) In the Network Event Observation System provided by: PBX observation means, MUX observation means, host observation means observing state of the enclosed switches which form network, multiple multimedia devices, data terminal devices, data disposition devices etc.;

event analyzing means which synthetically judge upon the state of the network damage based on observation information transmitted from the aforementioned observation means; contrastive notice content chart (9) which indicates notification means and notification destination of the indicated information of the damage according to the damage; and also provided by multimedia handling means (6) which treat damage information according to the aforementioned notification destination or notification means, when a damage occurs, the event analysis means (8) judge upon the damage conditions and based on this judgment the Network Event Notice System is designated to

access the aforementioned contrastive notice content chart (9), and to notify the damage information with indicated notification means according to the indicated notification destination.

(2) For the Network Event Notice System described in part 1 of the Patent Request, which in the aforementioned multimedia handling means (6) is provided by the access parameter chart (13) separately for each media with the entered notification number which correspond to the notification number and notification means obtained from the aforementioned contrastive notice content chart (9).

3. Detailed description of the invention

(Content)

Outline

Sphere of Application in Industry

Existing Technologies (Scheme 5)

Problems to be Solved by the Invention

Means to Solve the Problems (Scheme 1)

Operation

Operation Example (Schemes 2 to 4)

Effects Gained by the Invention

(Outline)

The Network Event Notice System is aiming to enable notification of the damage by the most efficient notification means from the network control means to the network user,

and for this aim in the Network Event Observation System provided by: PBX observation means, MUX observation means, host observation means observing state of the enclosed switches which form network,

multiple multimedia devices, data terminal devices, data disposition devices etc.; event analyzing means which synthetically judge upon the state of the network damage based on observation information transmitted from the aforementioned observation means; contrastive notice content chart which indicates notification means and notification destination of the indicated information of the damage according to the damage; and also provided by multimedia handling means which treat damage information according to the aforementioned notification destination or notification means, when a damage occurs, the event analysis means judge upon the damage conditions and based on this judgment the Network Event Notice System is designated to access the aforementioned contrastive notice content chart, and to notify the damage information with indicated notification means according to the indicated notification destination.

(Sphere of Application in Industry)

Actual invention offers the most efficient way of information notification to the user especially when damage occurs, using the damage information Event Notice System in the network.

(Existing Technologies)

In the last years, in industrial cities such as Tokyo or Osaka in the offices are equipped by data management devices (host processors), terminals, facsimiles, telephones and other devices, which are connected to the network to gain higher efficiency.

For example, as it is shown on the scheme 5, in the office A are placed a data management device (host processor) 70, telephone 71, facsimile 72 and others, and

in the office B there is terminal device 80, telephone 81, facsimile 82 etc., which form a network. In this case, the data management device 70 and data terminal device 80 become a network in charge of data transmission, and telephone 71, 81, facsimile 72, 82 form a network in charge of sound transmission. Moreover, the telephone 51 and facsimile 72 are connected to the PBX (Private Branch Exchange) 75, and together with data management device 70 connected to the multiplexer (MUX) 76.

In the same way, a user in the office B can connect telephone 81 and facsimile 82 to the PBX 85, and together with data management device 80 can connect it to multiplexer 86. Between the aforementioned multiplexers 76 and 86 is provided a high-speed digital circuit (SD circuit) 87. And in this way as it is shown on scheme 5 the network between office A and B is formed.

Separately in the offices A and B are set telephones 73, 83 and facsimile 74, 84, connected to the public communication network 78.

By the way, in the existing inter-company networks, networks in charge of data transmission, and networks in charge of sound transmission are administrated separately, and so if a damage occurs in either of these networks, the notification systems must be administrated separately as well.

In this case, when damage occurs in the network in charge for data transmission, each time users have to use network in charge of the sound transmission, use inter-company telephone lines or public communication network and the network administrator each time has to inform the users about condition of the network, and when

the damage occurs in the sound-transmission network, network administrator notifies the users using public communication network 78.

(Problems to be Solved by the Invention)

Therefore, in the company the data-transmission network, sound-transmission network, public communications network etc are provided. And when the damage occurs notification is provided via notifications terminal able to transmit notification to the users connected to all of those system, mostly via public communications network despite of the number of telephones, facsimiles and data-transmission terminals, and thus the most efficient notification using each of the networks doesn't take place.

And consequently, aim of actual invention is to offer Network Event Notice System which would decide beforehand according to the type of damage the optimal way of notification and notification destination and the most efficient way of using present networks.

(Means to Solve the Problem)

To achieve aforementioned aim, in the actual invention, as it is shown on scheme 1, together with providing host observation section 2 observing operation of the data management device 1, PBX observation section 3 observing functioning state of each of the inter-company switches 34, 39, 42, and MUX observation section observing functioning of each of the multimedia devices 35, 40, 41, by providing inter-company network administration device 5 and inputting there the output of the aforementioned host observation section 2, PBX observation section 3, MUX observation section 4 through

observation interface section 7, the gained this way information of the damage will be analyzed in the event analyzing section 8.

In the inter-company network administration device, as it will be described further and as it is shown on the scheme 3, when damage occurs in the network, a notice content cross reference table 9 is established indicated beforehand according to the damage about the object to be notified about it (object duty section), notification means (internal telephone, data terminal, public network telephone etc.), information to be notified, and via MMP interface section 10 according to the event to the multimedia management section 6 the information of the pre-set notification information, notification object and notification means will be transmitted, and the multimedia management section 6 according to this will inform the pre-set information by the pre-set means to the pre-set object.

Thus, on the scheme 1, 31 and 36 are terminal devices, 32 and 37 are internal telephones, 33 and 38 internal facsimiles, 34, 39, 42 internal switches, 35, 40 and 41 are multiple multimedia devices, 50 is the public telephone line, 51 and 53 are telephones of the public telephone line, 52 and 54 are facsimiles of the public communications network.

(Operation)

The functioning of the data terminal devices 31 and 36 via logic circuit drawn by the dotted line and data management device 1 are observed by the host observation section 2, and in the data management device

1 as well as host observation section observes the condition of its functioning.

The internal switches 34, 39, 42 via logic circuit drawn on the scheme by dotted line observe the state of its functioning in the PBX observation section 3.

The state of functioning of the multiplexers 35, 40 and 41 are observed in the MUX observation section 4.

And thus the signal about observation of the state of functioning gained in the host observation section 2, PBX observation section 3, MUX observation section 4, via observation interface section 7 of the inter-company administration device 5, is decoded in the event analyzing section 8, and the damage event is detected. The event analyzing section 8 based on the detected damage accesses a notice content cross reference table 9 and according to the damage reads the information about the appropriate notification object and notification terminal (e.g. internal telephone or terminal device). And via MMP interface section 10 this information is transmitted to the multimedia administration section 6. According to this in the multimedia administration section 6, as it is shown on the scheme 4 and will be described later, the access parameter table separate for each media is referred, is gained the contact number of the notification object and notification terminal (for example internal telephone number, terminal device ID etc), and according to this the internal telephone, terminal device or public communications network is accessed, and the aforementioned notice information (for example sound information in case of the telephone, visual information in case of the facsimile, text information in case of the data

terminal) is sent to the notification object. And thus according to the damage, the appropriate media is chosen, and notice is transmitted using optimal existing networks.

(Operation Example)

Operation of actual invention will be described based on schemes 2 to 4.

Scheme 2(A) is the structural operation scheme, scheme 2(B) is the scheme explaining the connection conditions, scheme 3 is the notice content cross reference table with input corresponding notification object, notification terminal and notification information ID, scheme 4 is the access parameter table separate for each media with notified internal telephone number of the notification object, internal facsimile number, terminal device ID, public network telephone number, public network facsimile number etc.

On the scheme 2 (the signs coincide with the scheme 1) to the inter-company network management device 5 is connected notice information preservation section 11, and to the notice information preservation section 11 is preserved the detailed notice content corresponding to the notice information ID the gained from the notice content cross reference table 9, for example (host data management section down), or (PBX default) etc, the beforehand decided notice information. And optionally according to the aforementioned notice information ID, notice information describing the detailed notice content is extracted.

Incidentally, the aforementioned notice content cross reference table 9, as it is shown on scheme 3, according to the damage, is provided by notice object ID column which shows notice object to be notified, notice terminal column showing the device of notification, notice information ID column containing the code telling which content to transmit. Therefore, the event analyzing section 8 according to the notice from the host observation section 2, PBX observation section 3, MUX observation section 4 when analyzing the occurred damage, reads the section referring to the particular event, and gains information about the notice object, terminal of the notice and notice information ID. For example, when the internal switch is turned down, it gets the information that notice objects are (a, c, e, f, g), notice terminal is data terminal device, and the notice information ID is notice information 2. Then accessing with this notice information 2 the notice information preservation section 11, for example the text information “Internal switch down” is obtained.

The multiplexer 6 contains NME interface section 12 which receives the signal transmitted from the aforementioned inter-company network administration device 5 and temporarily retains notice information, media-separate access parameter table 13 as shown on scheme 4, notice ID preservation section 14 which preserves notice terminal data and notice object data transmitted from the inter-company network administration device 5, parameter extraction section 15 which based on the notice object and notice terminal accesses the media-separate access parameter table 13, gains the notice destination number and its terminal ID,

telephone number, fax number and also sends the notice information transmitted from the NME interface section 12 to the notice destination selecting section 16, the notice destination selecting section 16 which according to the notice terminal signal transmitted from the notice ID preservation section 14 selects the notice access contact and sends to the selected notice access contact notice destination number and notice information, fax-use access management section 17 which controls access to the internal facsimile and sends image information, telephone-use access management section 18 which controls access to the internal telephones and sends sound information, data terminal-use access management section which controls access to the data terminal device and sends text information, public fax-use access management section 20 which controls access to the public facsimile and sends image information, public network telephone-use access management section 21 which controls access to the public-network telephones and sends sound information.

On the scheme 2(A) the dotted line between each access management section and each terminal device shows logic circuit and according to the detailed connections as it is shown on the scheme 2(B), the fax-use access management section 17 and telephone-use access management section 18 are connected to the internal switch 42 to use the inter-company telephone network.

The data terminal-use access management section 19 is connected to the data management device 1 to use network in charge of data.

The public fax-use access management section 20 and public telephone –use access management section 21 are connected to public communications network to use public communications network. Numbers on the scheme 2(B) correspond to those on the scheme 2(A).

In the media-separate access parameter table as it is shown on the scheme 4, are entered the media-separate access parameters of the notice objects a, b and so on, for example telephone number, or fax number, or data terminal device ID number etc. Therefore if it is necessary to notify the notice object a by the internal telephone, according to the media-separate access parameter table of the scheme 4, we get the internal telephone number “1234”.

In other words, in this explanation the notice objects a, b, c and so on are not people but inter-company units and notice terminals are set to those units.

Further follows explanation of operation of actual invention.

The host observation section 2 observes functioning of the data-network which contains data management device 1 operating as host processor, each data terminal devices 31, 36, and logic circuit between data terminal devices 31, 36 and data management device 1. This observation of the operation conditions can be performed either by polling from host observation section 2 towards data management section 1, data terminal section 31, 36 or by independent notice when there is notification of the damage from the operation conditions detecting device. Basically the address of the damage detection device, information about the location of the damage and content of the damage is

sent to the host observation section 2, and this is then transmitted to the inter-company network administration section 5. Here the address of the damage detection device is the distinction information given to each device to detect place where the damage occurred. The damage location information shows in which part of the indicated device the damage has occurred, for example the multiplexer contains 3 sections (multiple separator, SD circuit interface section, terminal-side interface section), and also the internal switch consists of telephone, facsimile side, and it shows in which part of this structure a damage has occurred. And the damage content is the type of the damage, for example circuit failure or error etc.

The PBX observation section observes functioning condition of each PBX 34, 39, 42, and of the logic circuit between PBX 34, 39, 42, the MUX observation section 4 observes multiple multimedia network operation conditions of the each multiplexer 35, 40, 41 and SD circuits 43, 44, 45. The observation of the functioning can be performed either by polling, or by independent notice from operation conditions detection device. The form of the sending data is the same as with the aforementioned host observation section 2. The damage notice information towards PBX observation section 3, MUX observation section 4 is transmitted to the inter-company network administration section 5.

In the inter-company network administration device 5 information from these host observation section 2, PBX observation section 3, MUX observation section 4 is analyzed at the event analyzing section 8, and the section where the damage occurred is recognized.

For example, when there is damage in the SD circuit 43, it is detected in the MUX 40, 41, and in this case to cut off the logic circuit between data terminal device 36 and data management device 1 and between PBX 39-42, the information about the damage is also received from host observation section 2 or PBX observation section 3. Therefore, the event analyzing section 8 analyzes this information and decides that damage occurred in the SD circuit.

In this way the event analyzing section 8 analyzes the damage and then according to the result of this analysis refers to the notice content cross reference table 9 and reads information on the notice object, notice terminal and notice information. In case of the aforementioned damage in the SD circuit, it reads the column with SD circuit down, the notice objects a, b, c, d, e, f, g, notice terminal public telephone, and as the notice information the notice information 3 is chosen.

Event analyzing section 8 according to this notice information 3 accesses notice information preservation section 11 and reads the sound information “SD circuit down”. Then this sound information and information about the mentioned notice objects (a, b, c, d, e, f, g) and notice information (public telephone) via MMP interface section 10 is sent to the multimedia management device 6.

In the multimedia among this information in the NME interface section 12 the “SD circuit down” sound signal is stored, in the notice ID preservation section 14 the data of the notice object (a, b, c, d, e, f, g) and notice terminal data “Public telephone” is stored.

In the notice ID preservation section 14 the data about the notice terminal “Public telephone” is transmitted to the notification selection section 16, and the notification selection section 16 connects to the public telephone-use access management section 21. The notice terminal data “public telephone” and data of the notice objects (a, b, c...) are transmitted to the parameter extraction section 15, and the parameter extraction section 15 basing on it accesses the media-separate access parameter table 13.

According to the media-separate access parameter table 13, first the public phone number of the first notice object is selected: 03-1234567. Parameter extraction section 15 sends this public telephone number 03-1234567 and sound signal “SD circuit down” received from the NME interface section 12 to the public telephone-use access management section 21. The public telephone-use access management section 21 according to this signal automatically dials the telephone number and transmits the sound signal. The notice object a in this way can receive the sound signal “SD circuit down” by public telephone.

Then the parameter extraction section 15 reads the phone number of the second notice object b: 045-3456789 in the media-separate access parameter table 13 and in the same way contact the notice object b. And the same way following action is taken upon notice objects c, d, e, f, and g.

In the company network through the multimedia devices the SD circuit is used, when there occurs damage in the multimedia devices or SD circuit, it is impossible to transmit notice through the inter-company network via

both data- and sound-networks, and in such case the public network is used.

(Effects by the Invention)

Due to the actual invention, according to the damage event, the decided beforehand damage notice takes place, by optimal means and optimal media.

4. Simple explanation of the scheme

Scheme 1 is the basic structure scheme.

Scheme 2 is the operation sample structure scheme

Scheme 3 is the notice content cross reference table used in this invention

Scheme 4 is the media-separate access parameter table used in this invention

Scheme 5 is scheme of existing technologies.

1 – data management device

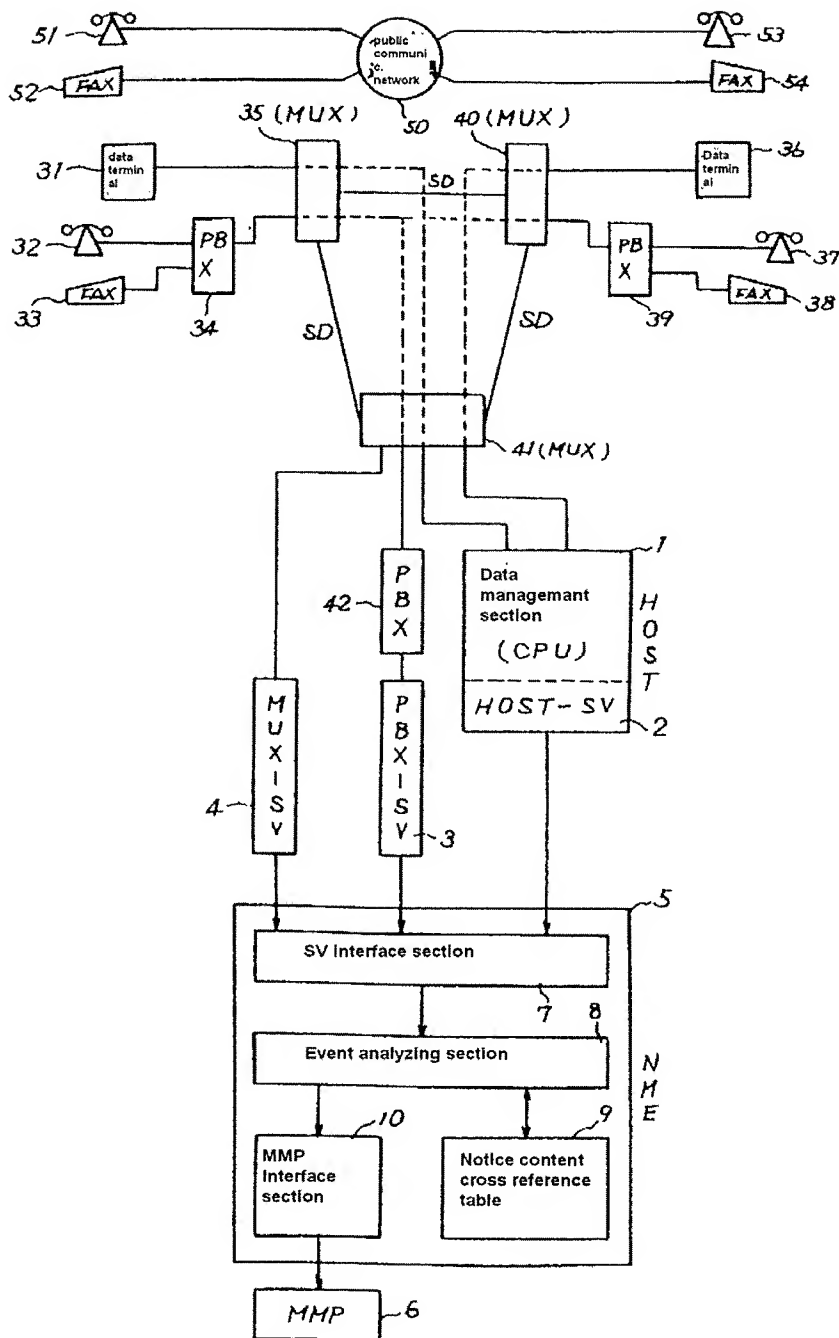
2 – host observation section

3 – PBX observation section

4 – MUX observation section

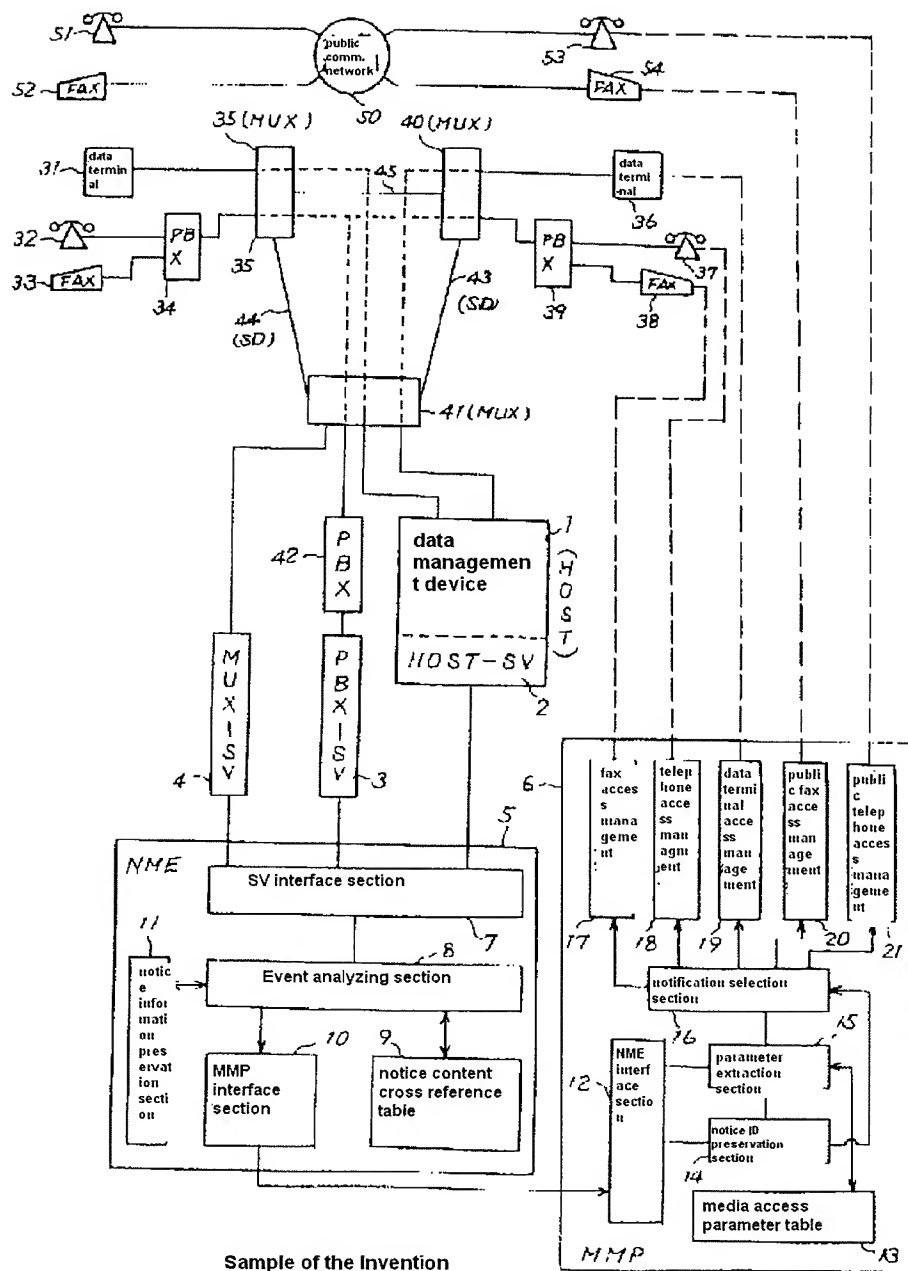
5 – inter-company network administration device

6 – multimedia management device.

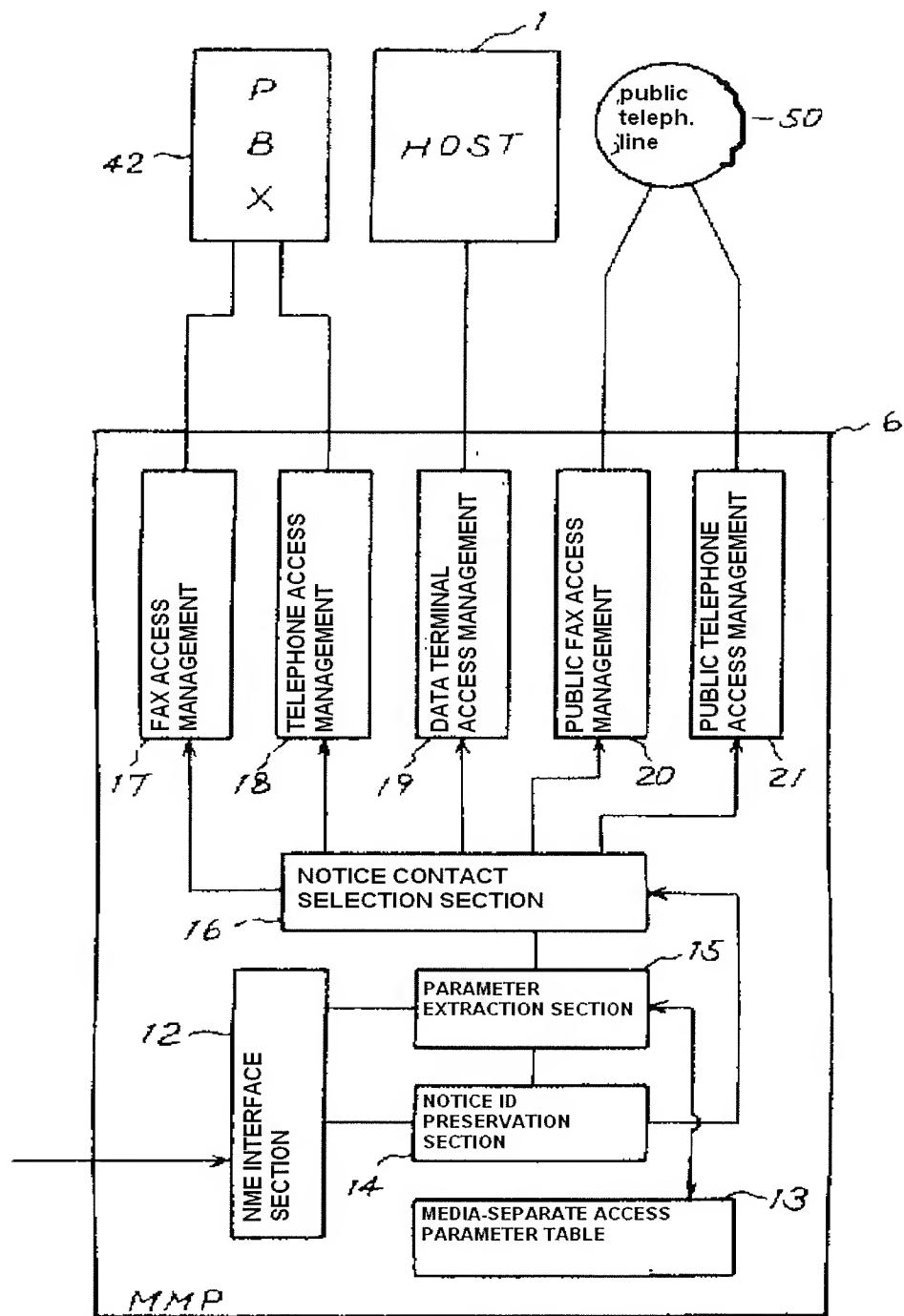


Basic scheme of
actual invention

Scheme 1



Sample of the Invention
Scheme 2 (a)



operation sample structure scheme

SCHEME 2 (B)

EVENT	NOTICE OBJECT ID	NOTICE TERMINAL	NOTICE INFORMATION ID
CALCULATOR DOWN	<i>a b c d e</i>	INTERNAL TELEPHONE	NOTICE INFORMATION 1
INTERNAL SWITCH DOWN	<i>a, c, e, f, g</i>	DATA TERMINAL	NOTICE INFORMATION 2
SD CIRCUIT DOWN	<i>a b, c, d, e, f, g</i>	PUBLIC TELEPHONE	NOTICE INFORMATION 3
⋮	⋮	⋮	⋮

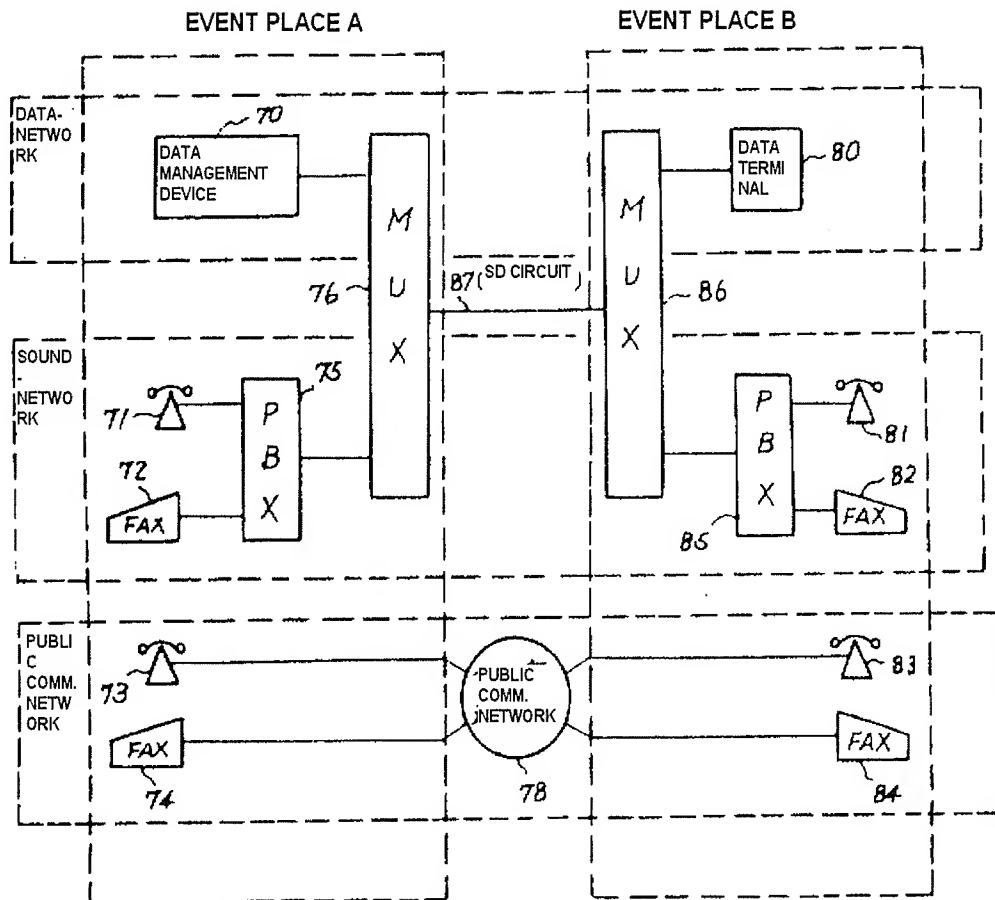
NOTICE EVENT CROSS REFERENCE TABLE

SCHEME 3

NOTICE OBJECT	MEDIA-SEPARATE ACCESS PARAMETER				
	INTERNAL TEL. NO.	INTERNAL FAX NO.	DATA TERMINAL ID	PUBLIC TEL. NO.	PUBLIC FAX NO.
<i>a</i>	<i>1234</i>	<i>2345</i>	<i>T12345</i>	<i>03-1234567</i>	<i>03-2345678</i>
<i>b</i>	<i>3456</i>	<i>4567</i>	<i>T23456</i>	<i>045-3456789</i>	<i>045-4567890</i>
⋮	⋮	⋮	⋮	⋮	⋮

MEDIA-SEPARATE ACCESS PARAMETER TABLE

SCHEME 4



EXISTING SAMPLE

SCHEME 5